This listing of claims will replace all prior versions, and listings, of claims in the application:

Claim 1 (canceled)

1 Claim 2 (previously presented): The method of claim 11
2 wherein the path is a label-switched path.

1 Claim 3 (previously presented): The method of claim 11
2 wherein the message is a resource reservation protocol PATH
3 message.

Claim 4 (canceled)

1 Claim 5 (previously presented): A method for processing,
2 by a node of a network, a message from another node of the
3 network, the message carrying at least one network path
4 determination constraint, the method comprising:
5   a) performing a constraint-based path determination
6   to a next node to generate a partial path; and
7   b) forwarding the message carrying the at least one
8   network path determination constraint to an adjacent
9   downstream node on the partial path,
10   wherein the at least one network path
11 determination constraint is expressed in the form of a
12 program including one or more executable instructions.

1 Claim 6 (previously presented): A network node comprising:
2   a) a path determination facility for performing a
3   constraint-based path determination to a next node to
4   generate a partial path; and
5   b) a signaling facility for

2

6   i)   receiving a message from another node of the
7   network, the message carrying at least one
8   network path determination constraint, and
9   ii) forwarding the message carrying the at least
10   one network path determination constraint to an
11   adjacent downstream node on the partial path,
12   wherein the at least one network path
13   determination constraint is expressed in the form of a
14   program including one or more executable instructions.

Claim 7 (canceled)

1   Claim 8 (previously presented): The method of claim 11
2   wherein the at least one network path determination
3   constraint includes a list of at least one explicit node
4   specified to be a part of the path.

1   Claim 9 (original): The method of claim 8 wherein the list
2   of at least one explicit node specified to be a part of the
3   path identifies at least one of a strict-hop node and a
4   loose-hop node.

1   Claim 10 (original): The method of claim 8 wherein the
2   message forwarded to the adjacent downstream node on the
3   partial path includes an updated list, and
4   wherein the node maintains the initial instance
5   of the list, as received.

1   Claim 11 (previously presented): A method for processing,
2   by a node of a network, a message from another node of the
3   network, the message carrying at least one network path
4   determination constraint, the method comprising:

3

5   a)   performing a constraint-based path determination
6   to a next node selected from a group of nodes
7   consisting of
8   (i) an area border node,
9   (ii) an autonomous system gateway node,
10   (iii) a node that can process one of the at least
11   one network path determination constraint carried
12   by the message which the present node cannot, or
13   will not, evaluate,
14   (iv) a specified loose-hop node, and
15   (v) a node to which constraint processing is
16   delegated,
17   to generate a partial path; and
18   b)   forwarding the message carrying the at least one
19   network path determination constraint to an adjacent
20   downstream node on the partial path, or to a delegated
21   node that is able to carry out the path determination,
22   wherein the at least one network path determination
23   constraint is expressed in the form of a program including
24   one or more executable instructions.

1   Claim 12 (original): The method of claim 11 wherein each
2   executable instruction includes:
3   -   information about a first operand;
4   -   information about a second operand; and
5   -   an operation code.

1   Claim 13 (original): The method of claim 12 wherein the
2   operation code identifies an operation selected from a
3   group of operations consisting of:
4   -   bit-wise AND;
5   -   bit-wise OR;

4

6   -   bit-wise XOR;

7   -   bit-wise equality;

8   -   bit-wise inversion;

9   -   Boolean AND;

10   -   Boolean OR; and

11   -   Boolean negation.

1   Claim 14 (original): The method of claim 12 wherein the

2   information about either of the first operand or the second

3   operand is a pointer to a register.

1   Claim 15 (original): The method of claim 14 wherein the

2   register is a register which contains a link attribute.

1   Claim 16 (original): The method of claim 14 wherein the

2   register is a read-only register.

1   Claim 17 (previously presented): The method of claim 11

2   further comprising:

3   -   generating a list which specifies nodes on the

4   partial path as strict hop nodes; and

5   -   forwarding the list to an adjacent downstream node

6   on the partial path.

1   Claim 18 (original): A method for processing, by a node of

2   a network, a message carrying at least one network path

3   determination constraint, the method comprising:

4   a)   determining whether the node is a tail-end node, a

5   head-end node, or an intermediate node of the path;

6   b)   if it is determined that the node is a tail-end

7   node and each of the at least on network path

8   determination constraint has been satisfied, then

5

9   signaling back to an upstream node of the path that

10   the path is OK;

11   c)   if it is determined that the node is one of a

12   head-end node and an intermediate node, then

13   i)   determining whether (a) a strict-hop node is

14   specified as a next node of an explicit path

15   constraint, (b) a loose-hop node is specified as

16   a next node of an explicit path constraint, or

17   (c) no node is specified as an explicit path

18   constraint,

19   ii) if a strict-hop node is specified as a next

20   node of an explicit path constraint, then

21   A)   applying each of the at least one

22   network path determination constraint to an

23   appropriate one of a link between the node

24   and the strict-hop node, the strict-hop

25   node, and the partial path defined,

26   B)   if each of the at least one constraint

27   is satisfied, then forwarding a message

28   carrying the at least one network path

29   determination constraint to the strict-hop

30   node, and

31   C)   if any one of the at least one

32   constraint was not satisfied, then signaling

33   a path error back to an upstream node,

34   iii) if one of (a) a loose hop node is specified

35   as a next node of an explicit path constraint or

36   (b) no node is specified as an explicit path

37   constraint, then

38   A)   performing a constraint-based path

39   determination to a next node selected from a

40   group of nodes consisting of

6

41   (1) an area border node,

42   (2) an autonomous system gateway node,

43   (3) a node that can process one of the

44   at least one network path determination

45   constraint carried by the message which

46   the present node cannot, or is

47   unwilling to, evaluate,

48   (4) a specified loose-hop node, and

49   (5) a node to which constraint

50   processing is delegated,

51   to generate a partial path, and

52   B) forwarding the message carrying the at

53   least one network path determination

54   constraint to an adjacent downstream

55   node on the partial path.

1 Claim 19 (original): The method of claim 18 wherein the

2 upstream node is the head-end node.

1 Claim 20 (previously presented): A computer-readable

2 medium having stored thereon at least one network path

3 determination constraint expressed as a computer-executable

4 instruction, each computer-executable instruction

5 comprising:

6   - information concerning a first operand;

7   - information concerning a second operand; and

8   - an operation code,

9   wherein the computer-readable medium is a

10 component of a first node of a communications network, and

11   wherein the at least one network path

12 determination constraint is expressed as a

13 computer-executable program including one or more

7

14   computer-executable instructions, and wherein the

15   computer-executable program was received in a message from

16   a second node of the communications network.

1   Claim 21 (previously presented): The computer-readable

2   medium of claim 20 wherein the operation code denotes an

3   operation selected from a group of operations consisting

4   of:

5   -   bit-wise AND;

6   -   bit-wise OR;

7   -   bit-wise XOR;

8   -   bit-wise equality;

9   -   bit-wise inversion;

10   -   Boolean AND;

11   -   Boolean OR; and

12   -   Boolean negation.

1   Claim 22 (previously presented): The computer-readable

2   medium of claim 20 wherein the information concerning

3   either of the first operand or the second operand is a

4   pointer to a register.

1   Claim 23 (previously presented): The computer-readable

2   medium of claim 22 wherein the register is a register that

3   contains a link attribute.

1   Claim 24 (previously presented): The computer-readable

2   medium of claim 22 wherein the link attribute is selected

3   from a group of link attributes consisting of:

4   - link type;

5   - maximum link bandwidth;

6   - maximum reservable link bandwidth;

8

7   - current bandwidth reservation;

8   - current bandwidth usage;

9   - link coloring;

10   - link administrative group;

11   - link delay;

12   - link media type;

13   - optical link wavelength;

14   - optical link minimum signal to noise ratio;

15   - optical link maximum power dispersion;

16   - optical link transmission power; and

17   - optical link receiver sensitivity.

1   Claim 25 (previously presented): The computer-readable

2   medium of claim 22 wherein the register is a register that

3   contains a node attribute.

1   Claim 26 (previously presented): The computer-readable

2   medium of claim 25 wherein the node attribute is selected

3   from a group of node attributes consisting of:

4   - node type;

5   - minimum node throughput;

6   - node quality of service support; and

7   - node queuing type.

1   Claim 27 (previously presented): The computer-readable

2   medium of claim 20 having further stored thereon at least

3   one network path determination constraint as a list of at

4   least one explicit node that is specified to be a part of

5   the network path.

9

1 Claim 28 (previously presented): The computer-readable
2 medium of claim 27 wherein the at least one explicit node
3 is one of a loose-hop node and a strict-hop node.

Claims 29-35 (canceled)

1 Claim 36 (original): A method for processing, by a node of
2 a network, a message carrying at least one network path
3 determination constraint, the method comprising:
4   a) if the tail-end node of the path is in a part of
5   the network, the topology of which is not known by the
6   node, then performing a constraint-based path
7   determination to a next node selected from a group of
8   nodes consisting of
9   (i) an area border node, and
10   (ii) an autonomous system gateway node,
11 to generate a partial path; and
12   b) forwarding the message carrying the at least one
13   network path determination constraint to an adjacent
14   downstream node on the partial path.

1 Claim 37 (previously presented): A method for processing,
2 by a node of a network, a message from another node of the
3 network, the message carrying at least one network path
4 determination constraint, the method comprising:
5   a) if a next node specified in a list of explicit
6   nodes is a loose-hop node, then performing a
7   constraint-based path determination to the next
8   loose-hop node to generate a partial path; and
9   b) forwarding the message carrying the at least one
10   network path determination constraint to an adjacent
11   downstream node on the partial path,

10

12   wherein the at least one network path

13   determination constraint is expressed in the form of a

14   program including one or more executable instructions.

1   Claim 38 (previously presented): A method for processing,

2   by a node of a network, a message from another node of the

3   network, the message carrying at least one network path

4   determination constraint, the method comprising:

5   a)   if the node cannot process any one of the at least

6   one network path determination constraint, performing

7   a constraint-based path determination to a node that

8   can process that one of the at least one network path

9   determination constraint, to generate a partial path;

10   and

11   b)   forwarding the message carrying the at least one

12   network path determination constraint to an adjacent

13   downstream node on the partial path,

14   wherein the at least one network path

15   determination constraint is expressed in the form of a

16   program including one or more executable instructions.

1   Claim 39 (previously presented): A method for processing,

2   by a node of a network, a message from another node of the

3   network, the message carrying at least one network path

4   determination constraint, the method comprising:

5   a)   if constraint processing has been delegated to

6   another network element, performing a constraint-based

7   path determination to the other network element to

8   which constraint processing has been delegated to

9   generate a partial path; and

11

10   b)   forwarding the message carrying the at least one
11   network path determination constraint to an adjacent
12   downstream node on the partial path,
13   wherein the at least one network path
14 determination constraint is expressed in the form of a
15 program including one or more executable instructions.

1   Claim 40 (previously presented):   A network node
2   comprising:
3   a)   a path determination facility for performing a
4   constraint-based path determination to a next node
5   to generate a partial path;
6   b)   a signaling facility for
7   i)   receiving a message carrying at least one
8   network path determination constraint, and
9   ii)   forwarding the message carrying the at
10   least one network path determination constraint
11   to an adjacent downstream node on the partial
12   path;
13   c)   a process for generating a traffic engineering
14   database; and
15   d)   a traffic engineering database generated by the
16   processing for generating,
17   wherein the path determination facility is further
18   adapted to determine at least a part of a path based
19   on
20   i)   contents of the traffic engineering
21   database, and
22   ii)   at least one path constraint received from
23   the signaling facility,
24   wherein, if the path determination facility
25   cannot determine a complete constraint-based path to a

12

26   specified tail-end node, then the path determination

27   facility performs a constraint-based path determination

28   to a next node selected from a group of nodes consisting

29   of

30   -   an area border node,

31   -   an autonomous system gateway node,

32   -   a node that can process one of the at least

33   one network path determination constraint

34   carried by the message which cannot be

35   evaluated by the present node,

36   -   a specified loose-hop node, and

37   -   a node to which constraint processing is

38   delegated,

39   to generate a partial path, and

40   the signaling facility forwards a message carrying the at

41   least one path constraint to an adjacent downstream node

42   on the partial path.

1   Claim 41 (original): The routing facility of claim 40

2   wherein the path is a label-switched path.

        Claims 42-52 (canceled)

1   Claim 53 (previously presented): The method of claim 5,

2   wherein the node is an intermediary node, and wherein the

3   act of performing a constraint-based path determination

4   includes determining whether a link from the node to the

5   next node specified in a first portion of the path

6   satisfies the set of at least one constraint.

13

1   Claim 54 (previously presented): A method for
2   processing, by a node of a network, a message carrying at
3   least one network path determination constraint, the
4   method comprising:
5   a)   performing a constraint-based path determination
6   to a next node to generate a partial path;
7   b)   forwarding the message carrying the at least one
8   network path determination constraint to an adjacent
9   downstream node on the partial path, wherein the
10   node is an intermediary node, and wherein the act of
11   performing a constraint-based path determination
12   includes determining whether a link from the node to
13   the next node specified in the first portion of the
14   path satisfies the set of at least one constraint;
15   and
16   c)   if the link, from the first intermediary node to
17   the next node specified in a first portion of the
18   path is determined to satisfy the set of at least
19   one constraint, then transmitting the received
20   message to the next node.

1   Claim 55 (previously presented): A method for
2   processing, by a node of a network, a message carrying at
3   least one network path determination constraint, the
4   method comprising:
5   a)   performing a constraint-based path determination
6   to a next node to generate a partial path;
7   b)   forwarding the message carrying the at least one
8   network path determination constraint to an adjacent
9   downstream node on the partial path, wherein the

14

10   node is an intermediary node, and wherein the act of

11   performing a constraint-based path determination

12   includes determining whether a link from the node to

13   the next node specified in the first portion of the

14   path satisfies the set of at least one constraint;

15   and

16   c) if the link from the first intermediary node to

17   the next node specified in a first portion of the

18   path is determined not to satisfy the set of at

19   least one constraint, then transmitting an error

20   message back to the source node.

Claims 56-62 (canceled)

1   Claim 63 (previously presented): The network node of

2   claim 6 wherein if constraint processing has been

3   delegated to another network element, then the path

4   determination facility further performs a

5   constraint-based path determination to the other network

6   element to which constraint processing has been delegated

7   to generate a partial path.

Claims 64-70 (canceled)

1 Claim 71 (previously presented): The method of claim 36

2 wherein each of the at least one network path determination

3 constraint is an executable instruction.

15

1 Claim 72 (previously presented): A method for processing,
2 by a node of a network, a message from another node of the
3 network, the message carrying at least one network path
4 determination constraint, the method comprising:
5   a) determining whether to delegate constraint
6   processing to another device; and
7   b) if it has been determined that constraint
8   processing has been delegated to another network
9   element, forwarding the message carrying the at least
10   one network path determination constraint to the other
11   device,
12   wherein each of the at least one network path
13 determination constraint is an executable instruction.

    Claim 73-78 (canceled)

1 Claim 79 (previously presented): The method of claim 5,
2 wherein the program includes a plurality of executable
3 instructions.

1 Claim 80 (previously presented): The method of claim 6,
2 wherein the program includes a plurality of executable
3 instructions.

1 Claim 81 (previously presented): The method of claim 11,
2 wherein the program includes a plurality of executable
3 instructions.

1 Claim 82 (previously presented): The method of claim 37,
2 wherein the program includes a plurality of executable
3 instructions.

16

1   Claim 83 (previously presented): The method of claim 38,
2   wherein the program includes a plurality of executable
3   instructions.

1   Claim 84 (previously presented): The method of claim 39,
2   wherein the program includes a plurality of executable
3   instructions.

17